

NEW DISTRIBUTION DATA FOR *MARTAREGA*, *BUENOA* AND
ABEDUS, INCLUDING THE FIRST RECORD OF THE GENUS
MARTAREGA IN THE UNITED STATES (HEMIPTERA:
NOTONECTIDAE, BELOSTOMATIDAE)

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ABSTRACT: Recent collections of aquatic Hemiptera reveal significant range extensions for several poorly known species of Notonectidae and Belostomatidae, including the first record for the genus *Martarega* White in the United States. The first record of flight in *Abedus* Stål is noted, as well as fragmentary notes on the habits of *Martarega*. The taxonomy of *Abedus signoreti* is discussed with a suggested change in the status of *A. signoreti vicinus*.

Collections of aquatic Hemiptera made in Arizona, Mexico and Venezuela during the last few years have helped to clarify the geographic ranges of several poorly known species of Notonectidae and Belostomatidae. Most of the material on which this report is based is located in the Los Angeles County Museum of Natural History (LACM), or in the A. S. Menke Collection (ASM) which was recently acquired by the Los Angeles museum. Some specimens from the collections of C. V. Reichart, Providence College, Rhode Island (CVR); Snow Entomological Museum, University of Kansas (KU); and the University of Michigan Museum of Zoology (UMMZ) also have been examined.

Family Notonectidae
Martarega White

Except for a brief mention of two new records from Brazil (Truxal, 1957), nothing has been published since Truxal's (1949) revision on this interesting genus. Until recently, *Martarega* has been considered to be strictly a Neotropical group. The northernmost records for *Martarega* given by Truxal were from central Mexico (*M. mexicana* Truxal). However, in 1958, A. S. Menke and L. A. Stange collected a large series of *M. mexicana* in central Arizona, thus establishing the fact that *Martarega* occurs much farther north. Since then, F. S. Truxal, C. V. Reichart, and J. T. Polhemus³ have made additional collections of *M. mexicana* at various Arizona localities. All of these collections have

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³After this paper was in press, a report by Polhemus was published concerning his Arizona *Martarega* records. [Some Hemiptera New to the United States (Notonectidae, Saldidae). Proc. Ent. Soc. Wash. 68 (1):57. March 1966].

been made in either the Verde River or Salt River drainages in the Mogollon Rim area of central Arizona. In view of the long history of collecting in Arizona and other southwestern states with no previous evidence of *Martarega*, it seems reasonable to assume that the genus has only recently invaded Arizona.

As is generally true for this genus, the great majority of specimens collected in Arizona by Menke, Stange, Truxal and Reichart are brachypterous. In fact, of the more than three hundred specimens collected, only three (by Reichart) are macropterous.

Since nothing has been published on the habits of *Martarega*, we should like to offer the following fragmentary notes. Several collectors have observed *Martarega* jumping free of the water when their habitat is invaded by the collector's net, or when said habitat is otherwise endangered, as by an approaching boat. A. S. Menke noted this behavior in *M. chinai* Hynes in Venezuela, and C. V. Reichart observed the same behavior in *M. mexicana* in Arizona. R. L. Usinger and F. S. Truxal have also noted this phenomenon for *Martarega* in Peru and Brazil (respectively). The most obvious explanation for this behavior is that it is a means of escaping enemies. Presumably *Martarega* serve as food for fish and when endangered by such predators, one might assume that they jump free of the water in an attempt to escape.

Martarega are stream inhabitants, and tend to be gregarious forming large



Figure 1. The East Verde River, seven miles north of Payson, Arizona (site of first record for *Martarega* in the United States) typifies the stream habitat of the back-swimmer genus *Martarega*.

schools in deep sheltered eddies. Like *Buenoa*, they appear to be in equilibrium with the water and do not require active swimming movements or a clinging to underwater vegetation to remain submerged. It has been proposed by Miller (1964) that *Buenoa* and its Old World counterpart, *Anisops*, are able to maintain this neutral buoyancy in water because of the presence of large haemoglobin-filled tracheal cells in their abdomens. Haemoglobin has not been recorded in *Martarega* or in any notonectids other than *Buenoa* and *Anisops*.

Martarega mexicana Truxal

UNITED STATES, ARIZONA, *Gila Co.*: East Verde River, 7 mi. N. Payson, IX-11-1958, 95 ♂, 68 ♀ (A. S. Menke and L. A. Stange, LACM); X-26-1959, 61 ♂, 55 ♀ (F. S. Truxal and L. Martin, LACM). *Navajo Co.*: Carrizo Creek at Highway 60 (about 25 mi. S.W. Show Low), VII-31-1965, 46 ♂, 26 ♀ (C. V. Reichart, CVR, LACM).

MEXICO, *Nayarit*: Compostela, XII-30-1958, 24 ♂, 19 ♀ (A. S. Menke and L. A. Stange, LACM). *Vera Cruz*: Tamazunchale, IV-11-1949, 5 ♂, 4 ♀ (F. S. Truxal, LACM).

Truxal (1949) records this species from the state of Morelos in Mexico, and from Guatemala.

Martarega chinai Hynes

VENEZUELA: Caño Mariusa, Orinoco Delta (Orinoco River approximately 140 kms. N.E. Barrancas), VII-8-1958, 4 ♂, 3 ♀ (A. S. Menke, LACM). 42 kms. S.E. Maturin, Monagas, VII-3-1958, 1 ♀ (A. S. Menke, LACM).

Truxal (1949) records this species from Brazil and Bolivia.

Buenoa Kirkaldy

Buenoa hungerfordi Truxal

MEXICO, *Jalisco*: Santa Cruz Astillero, XII-30-1958 (A. S. Menke and L. A. Stange, LACM). *Puebla*: Petlalcingo, VII-22-1959 (A. S. Menke and L. A. Stange, LACM). *Sonora*: Cibola, V-18-1954 (F. S. Truxal, LACM).

Truxal (1953) described this species from two widely separated areas: to the south in the Mexican state of Chiapas, and to the north in Arizona and the Mexican state of Sonora. The above records help to fill in this gap in the known distribution of *hungerfordi*. Intensive collecting in Arizona has yielded specimens of *hungerfordi* only from Sabino Canyon in Pima County, one of the type localities.

Family Belostomatidae

Abedus Stål

Since Menke's (1960) revision of this genus, the following new data are worth noting. Especially interesting are the records of *Abedus signoreti vicinus*

Mayr and *A. signoreti sonorensis* Menke taken at black light at night. These are the first authentic records of flight in *Abedus*. *Abedus signoreti* is the most *Belostoma*-like species in the genus *Abedus*, and is therefore, the species in which one would expect to find the common *Belostoma* habit of flying to light.

Abedus signoreti Mayr

Menke (1960) recognized three subspecies of *A. signoreti*. Some of the following records are interesting because they indicate a greater overlap in the ranges of the subspecies than was indicated by Menke. In the zone of overlap between *A. signoreti vicinus* Mayr and *A. signoreti sonorensis* Menke (the state of Sinaloa), the characters which separate the two forms tend to break down. However, character breakdown is not as common within the zone of overlap of *A. signoreti vicinus* Mayr and *A. signoreti* s.s. suggesting that perhaps *A. vicinus* should be elevated to specific status (with *sonorensis* as a subspecies).

Abedus signoreti s.s.

MEXICO, *Chiapas*: Cintalapa, 28 mi. W., IV-9-1962 (F. D. Parker and L. A. Stange, ASM). Villa Flores, 9 mi. N., VIII-12-1963 (F. D. Parker and L. A. Stange, ASM). *Nuevo Leon*: El Alamo, IV-24-1956 (ASM). *Morelos*, IV-16-1956 (L. Martinez, ASM). *San Luis Potosi*: Ciudad de Valles, VIII-8-1951 (C. J. Drake, ASM). *Tamaulipas*: Ciudad Victoria, XI-5-1936 (H. D. Thomas, KU, ASM); VIII-9-1951 (C. J. Drake, ASM). *Llera*, VI-15-1953 (ASM). *Vera Cruz*: Alvarado, VII-28-1951 (C. J. Drake and F. C. Hottes, ASM). Xico (Jico), 16 kms. S. W. Jalapa, IV-3-? (S. Meek, ASM).

EL SALVADOR: Los Chorrros National Park, VIII-28-1961 (M. E. Irwin, ASM). Quezaltepeque, 5 mi. N., VI-28-VIII-1961 (M. E. Irwin, ASM); 2 mi. W., VIII-10-1961 (M. E. Irwin, ASM).

HONDURAS: Minas de Oro, Comayagua, 4000', IV-29-? (ASM). Guaimaca, 10 mi. E. on Highway 3, Dept. Francisco Morazan, XI-6-1964 (J. S. Packer, ASM).

Abedus signoreti vicinus Mayr

MEXICO: *Chiapas*: Comitan, VIII-30-1937 (H. D. Thomas, KU, ASM). *Jalisco*: Plan de Barrancas, 3 mi. S.E., taken at black light, VII-8-1963 (F. D. Parker and L. A. Stange, ASM). *Morelos*: Xochicalco Pyramid, III-29-1962 (F. D. Parker and L. A. Stange, ASM). Yauatepec, taken at black light, III-26-1962 (F. D. Parker and L. A. Stange, ASM); at black light, VII-13-1963 (F. D. Parker and L. A. Stange, ASM). *Puebla*: Izucar de Matamoros, at black light, VIII-1-1963 (F. D. Parker and L. A. Stange, ASM). *Sinaloa*: Chupaderos, Highway 40, III-19-1962 (F. D. Parker and L. A. Stange, ASM).

The Chiapas record extends the known range of *A. vicinus* much farther south and well into the range of *A. signoreti* s.s. The specimens are typical *A. vicinus*.

Abedus signoreti sonorensis Menke

MEXICO, *Sinaloa*: Elota, 8 mi. S., at black light, VIII-26-1963 (F. D. Parker and L. A. Stange, ASM). *Sonora*: Alamos, IX-1-1960 (R. L. Westcott, ASM); 10 mi. S. E., V-22-1962 (F. D. Parker and L. A. Stange, ASM). La Aduana, VI-12-1961 (A. S. Menke, ASM).

One female from the series collected at Elota, Sinaloa, has a partially formed embolial fracture. It is interesting to note that *Abedus signoreti vicinus* is characterized by the presence of this fracture, whereas *A. sonorensis* lacks it.

Abedus ovatus Stål

MEXICO, *Morelos*: Cuernavaca, 5 mi. E., III-28-1962 (F. D. Parker and L. A. Stange, ASM).

This is the first record of *A. ovatus* from Morelos, Mexico.

Abedus breviceps Stål

MEXICO, *Guerrero*: Iguala, 45 mi. S.W., I-8-1956 (ASM). *Mexico*: Sabinas, V-6-1962 (F. D. Parker and L. A. Stange, ASM). *Vera Cruz*: Orizaba, Rio Blanca (A. J. Woolman, ASM).

The Vera Cruz record is the first for this Mexican state.

Abedus immensus Menke

MEXICO, *Aguascalientes*: Sierra Fria, 40 mi. S.W. Rincon de Romos, 8200', III-9-1953 (I. J. Cantrall, ASM). *Durango*: San Luis, 2.5 mi. W., 8000', III-24-1953 (I. J. Cantrall, ASM).

This species appears to be restricted to the western part of the central plateau of northern Mexico.

Abedus stangei Menke

MEXICO, *Michoacan*: Dos Aguas (lumber camp 22 mi. N.W. Agualilla on Apazingan-Agualilla road), 6900 ft., VI-18-1958 (M. Mendoza, UMMZ and ASM). *Puebla*: Sierra de Zacapoaxtla (ASM).

Previous records of this species were from the Mexican states of Vera Cruz and Puebla (Menke, 1960). The Michoacan record cited here extends the known range of *A. stangei* considerably westward. Like *A. immensus*, this species evidently is found only at higher elevations (4000 feet and above).

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